CLAIMS

1. A method of dissolving carbon nanotubes, characterized in that it comprises the reduction of nanotubes, which results in negatively charged nanotubes with positive counterions.

2. The method as claimed in claim 1, characterized in that the counterions are alkali metal cations.

3. The method as claimed in claim 1 or 2, characterized in that it includes the addition, under anaerobic conditions, to the nanotubes of a salt of formula:

$$A^+B^-$$

in which:

- A^+ represents a cation of an alkali metal ion, such as lithium or sodium; and
- B^- represents an anion of a polyaromatic compound, so as to electrically charge the nanotubes.

4. The method as claimed in claim 3, characterized in that the aromatic compound is chosen from naphthalene, benzophenone, fluorenone and anthraquinone.

5. The method as claimed in any one of claims 1 to 4, characterized in that the polar organic solvents are chosen from sulfolane, dimethyl sulfoxide, dimethylformamide, N-methylpyrrolidone and N-methylformamide.

6. The method as claimed in any one of the preceding claims, characterized in that the nanotubes contain boron as a substitute for carbon.

7. The method as claimed in any one of the preceding claims, characterized in that the nanotubes used are single-walled nanotubes.

8. The method as claimed in any one of claims 1 to 6, characterized in that the nanotubes used are multi-walled nanotubes.

9. The method as claimed in claim 7 or 8, characterized in that the nanotubes used are empty nanotubes.

10. The method as claimed in claim 7 or 8, characterized in that the nanotubes used contain molecules, for example photosensitive molecules or fullerenes, salts, such as alkali metal halides, or else metal elements.

11. The method as claimed in any one of the preceding claims, characterized in that it further includes a step of purifying the nanotubes.

12. The method as claimed in any one of the preceding claims, characterized in that it further includes a step of functionalizing the surface or the ends of the nanotubes.

13. The application of the method as claimed in any one of the preceding claims to the preparation of composites having improved properties or of oriented or unoriented thin films of carbon nanotubes, or of composite films.

14. The application as claimed in claim 13, as mechanical reinforcements, antistatic materials and materials for electromagnetic shielding.

15. The application as claimed in claim 13, as electrically conducting transparent coatings.